

## **Study – Radiation Shielding Effectiveness of the Prototyped High Temperature Superconductivity (HTS) ‘Artificial’ Magnetosphere for Deep Space Missions**

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The high temperature superconductor (HTS) is being used to develop the magnets for the Variable Specific Impulse Magneto-plasma Rocket (VASIMR®) propulsion system and may provide lightweight magnetic radiation shielding to protect spacecraft crews from radiation caused by GCR and SPEs on missions to Mars. A study is being planned to assess the radiation shielding effectiveness of the artificial magnetosphere produced by the HTS magnet.

VASIMR is an advanced technology propulsion engine which is being touted as enabling one way transit to Mars in 90 days or less. This is extremely important to NASA. This technology would enable a significant reduction in the number of days in transit to and from Mars and significantly reduce the astronauts’ exposure to a major threat - high energy particles from solar storms and GCR during long term deep space missions.

This paper summarizes the plans for the study and the subsequent testing of the VASIMR technology onboard the ISS slated for 2013.